

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A game apparatus in which a virtual camera arranged in a three-dimensional game space is made to move to follow a target location determined by a location of a player character in the game space so that a behavior of the player character in the game space is displayed in a display as a game image, comprising:

an input-information obtaining programmed logic circuitry for obtaining input information input through a controller by a player at intervals of a predetermined number of frames in order to move said player character in said game space at a speed;

a location updating programmed logic circuitry for updating the location of said player character and said target location in said game space based on said input information at said intervals of said predetermined number of frames;

a difference length calculating programmed logic circuitry for calculating at said intervals of said predetermined number of frames a difference length between a predetermined reference distance and a distance between said location of said target location and a location of said virtual camera;

a virtual-camera-location updating programmed logic circuitry for updating at said intervals of said predetermined number of frames in order said location of said virtual camera in such a manner that said difference length calculated by said difference length calculating programmed logic circuitry is reduced by a predetermined ratio of the difference length calculated at the previous interval when said difference length exists, regardless of the direction in a change of the speed of the player character in the game space, wherein

said difference length is set at a predetermined maximum value when said difference length calculated at the previous interval exceeds the predetermined maximum value; and

a game-image generating programmed logic circuitry for generating the game image based on the updated location of said player character and location of said virtual camera.

2. (Previously Presented) The game apparatus according to claim 1, further comprising a virtual-camera setting programmed logic circuitry for arranging the virtual camera in a location determined in a predetermined manner toward a point of regard, and setting a direction of said virtual camera in such a manner as to face said point of regard; wherein

a reference location is a location of said point of regard,

said virtual-camera-location updating programmed logic circuitry updates in order the location of said virtual camera by updating in order the location of said point of regard in such a manner that a distance from said target location to the location of said point of regard is shortened at a predetermined ratio.

3. (Previously Presented) The game apparatus according to claim 1, further comprising a virtual-camera setting programmed logic circuitry for arranging the virtual camera in a location determined in a predetermined manner toward a point of regard, and setting a direction of said virtual camera in such a manner as to face said point of regard; wherein

a reference location is a location of said virtual camera,

said target location is an initial location of said virtual camera that moves in conjunction with said player character,

said virtual-camera-location updating programmed logic circuitry updates in order the

location of said virtual camera in such a manner that a distance from said target location to the location of said virtual camera is shortened at a predetermined ratio.

4. (Previously Presented) The game apparatus according to claim 1, further comprising a distance determining programmed logic circuitry for setting a maximum distance that uses said target location as a reference, and determining whether or not the distance between the target location and said virtual camera location is rendered longer than said maximum distance; and

a forcedly updating programmed logic circuitry for forcedly updating said virtual camera location to a location within the maximum distance that uses said target location as a reference when determined by said distance determining programmed logic circuitry that the distance is rendered longer than said maximum distance.

5. (Previously Presented) The game apparatus according to claim 4, wherein said camera-location updating programmed logic circuitry includes a virtual camera location calculating programmed logic circuitry for calculating an updated virtual camera location, and

said distance determining programmed logic circuitry determines whether or not said updated virtual camera location calculated by said virtual camera-location calculating programmed logic circuitry is rendered longer than the maximum distance from said target location.

6. (Currently Amended) A storing medium that stores a control program of a virtual

camera executed by a computer of a game apparatus in which the virtual camera arranged in a three-dimensional game space is made to move to follow a target location determined by a location of a player character in the game space so that a behavior of the player character in the game space is displayed in a display as a game image, the control program of said virtual camera allows said computer to be functioned to provide:

an input-information obtaining programmed logic circuitry for obtaining input information input through a controller by a player at intervals of a predetermined number of frames in order to move said player character in said game space at a speed;

a location updating programmed logic circuitry for updating the location of said player character and said target location in said game space based on said input information at said intervals of said predetermined number of frames;

a difference length calculating programmed logic circuitry for calculating at said intervals of said predetermined number of frames a difference length between a predetermined reference distance and a distance between said location of said target location and a location of said virtual camera;

a virtual-camera-location updating programmed logic circuitry for updating at said intervals of said predetermined number of frames in order said location of said virtual camera in such a manner that said difference length calculated by said difference length calculating programmed logic circuitry is reduced by a predetermined ratio of the difference length calculated at the previous interval when said difference length exists, regardless of the direction in a change of the speed of the player character in the game space, wherein

said difference length is set at a predetermined maximum value when said difference length calculated at the previous interval exceeds the predetermined maximum value; and

a game-image generating programmed logic circuitry for generating the game image based on a updated location of said player character and location of said virtual camera.

7. (Currently Amended) A method of controlling a virtual camera in a game apparatus in which the virtual camera arranged in a three-dimensional game space is made to move to follow a target location determined by a location of a player character in the game space so that a behavior of the player character in the game space is displayed in a display as a game image, comprising following steps of:

(a) obtaining input information input through a controller by a player at intervals of a predetermined number of frames in order to move said player character in said game space at a speed,

(b) updating the location of said player character and said target location in said game space based on said input information at said intervals of said predetermined number of frames,

(c) calculating at said intervals of said predetermined number of frames a difference length between a predetermined reference distance and a distance between said location of said target location and a location of said virtual camera,

(d) updating at said intervals of said predetermined number of frames in order said location of said virtual camera in such a manner that said calculated difference length is reduced by a predetermined ratio of the difference length calculated at the pervious interval when said difference length exists, regardless of the direction in a change of the speed of the player character in the game space, wherein

said difference length is set at a predetermined maximum value when said difference length calculated at the previous interval exceeds the predetermined maximum value, and

(e) generating the game image based on the updated location of said player character and location of said virtual camera.

8. (Currently Amended) A game apparatus in which a virtual camera arranged in a three-dimensional game space is made to move to follow a target location determined by a location of a player character in the game space so that a behavior of the player character in the game space may be displayed as a game image, comprising:

an input-information obtaining programmed logic circuitry for obtaining input information input through a controller by a player at intervals of a predetermined number of frames in order to move said player character in said game space at a speed;

a location updating programmed logic circuitry for updating the location of said player character and said target location in said game space based on said input information at said intervals of said predetermined number of frames;

a difference length calculating programmed logic circuitry for calculating at said intervals of said predetermined number of frames a difference length between a predetermined reference distance and a distance between said location of said target location and a location of said virtual camera;

a virtual-camera-location updating programmed logic circuitry for sequentially updating at said intervals of said predetermined number of frames, on a frame by frame basis, said location of said virtual camera in such a manner that said difference length calculated by said difference length calculating programmed logic circuitry is reduced by a predetermined ratio of the difference length calculated at the previous interval when said difference length exists, regardless of the direction in a change of the speed of the player character in the game space,

wherein

said difference length is set at a predetermined maximum value when said difference length calculated at the previous interval exceeds the predetermined maximum value; and

a game-image generating programmed logic circuitry for generating the game image based on the updated location of said player character and location of said virtual camera.

9. (Previously Presented) The game apparatus according to claim 8, further comprising a virtual-camera setting programmed logic circuitry for arranging the virtual camera in a location determined in a predetermined manner toward a point of regard, and setting a direction of said virtual camera in such a manner as to face said point of regard; wherein

a reference location is a location of said point of regard,
said virtual-camera-location updating programmed logic circuitry sequentially updates, on a frame by frame basis, the location of said virtual camera by sequentially updating the location of said point of regard in such a manner that a distance between said target location and the location of said point of regard is made smaller at a predetermined ratio per frame.

10. (Previously Presented) The game apparatus according to claim 8, further comprising a virtual-camera setting programmed logic circuitry for arranging the virtual camera in a location determined in a predetermined manner toward a point of regard, and setting a direction of said virtual camera in such a manner as to face said point of regard; wherein

a reference location is a location of said virtual camera,
said target location is an initial location of said virtual camera that moves in conjunction

with said player character,

said virtual-camera-location updating programmed logic circuitry sequentially updates, on a frame by frame basis, the location of said virtual camera in such a manner that a distance between said target location and the location of said virtual camera is shortened at a predetermined ratio.

11. (Previously Presented) The game apparatus according to claim 8, further comprising a distance determining programmed logic circuitry for setting a maximum distance that uses said target location as a reference, and determining whether or not the distance between the target location and said virtual camera location is rendered longer than said maximum distance; and

a forcedly updating programmed logic circuitry for forcedly updating said virtual camera location to a location within the maximum distance that uses said target location as a reference when determined by said distance determining programmed logic circuitry that the distance is rendered longer than said maximum distance.

12. (Previously Presented) The game apparatus according to claim 11, wherein said camera-location updating programmed logic circuitry includes a virtual camera-location calculating programmed logic circuitry for calculating an updated virtual camera location, and

said distance determining programmed logic circuitry determines whether or not said updated virtual camera location calculated by said virtual camera-location calculating programmed logic circuitry is rendered longer than the maximum distance from said target

location.

13. (Currently Amended) A storage medium that stores a control program of a virtual camera executed by a computer in which the virtual camera arranged in a three-dimensional game space follows a target location determined by a location of a player character in the game space so that a behavior of the player character in the game space may be displayed as a game image, the control program of said virtual camera allows execution by said computer to provide:

an input-information obtaining programmed logic circuitry for obtaining input information input through a controller by a player at intervals of a predetermined number of frames in order to move said player character in said game space at a speed;

a location updating programmed logic circuitry for updating the location of said player character and said target location in said game space based on said input information at said intervals of a predetermined number of frames;

a difference length calculating programmed logic circuitry for calculating at said intervals of said predetermined number of frames a difference length between a predetermined reference distance and a distance between said location of said target location and a location of said virtual camera;

a virtual-camera-location updating programmed logic circuitry for sequentially updating at said intervals of a predetermined number of frames, on a frame by frame basis, said location of said virtual camera in such a manner that said difference length calculated by said difference length calculating programmed logic circuitry is reduced by a predetermined ratio of the difference length calculated at the previous interval when said difference length exists, regardless of the direction in the change of a speed of the player character in the game space, wherein

said difference length is set at a predetermined maximum value when said difference length calculated at the previous interval exceeds the predetermined maximum value; and
a game-image generating programmed logic circuitry for generating the game image based on the updated location of said player character and location of said virtual camera.

14. (Currently Amended) A method of controlling a virtual camera in a three-dimensional game space so as to follow a target location determined by a location of a player character in the game space so that a behavior of the player character in the game space may be displayed in a display as a game image, the method comprising:

(a) obtaining input information input through a controller by a player at intervals of a predetermined number of frames in order to move said player character in said game space at a speed,

(b) updating the location of said player character and said target location in said game space based on said input information at said intervals of a predetermined number of frames,

(c) calculating at said intervals of said predetermined number of frames a difference length between a predetermined reference distance and a distance between said location of said target location and a location of said virtual camera,

(d) sequentially updating at intervals of a predetermined number of frames, on a frame by frame basis, said location of said virtual camera in such a manner that said calculated difference length is reduced by a predetermined ratio of the difference length calculated at the pervious interval when said difference length exists, regardless of the direction in a change of the speed of the player character in the game space, wherein

said difference length is set at a predetermined maximum value when said difference

length calculated at the previous interval exceeds the predetermined maximum value, and

(e) generating the game image based on the updated location of said player character and location of said virtual camera.

15. (Currently Amended) A game apparatus in which a virtual camera arranged in a three-dimensional game space is made to follow a target location determined by a location of a player character in the game space so that a behavior of the player character in the game space is displayed in a display as a game image, comprising:

an input-information obtaining programmed logic circuitry for obtaining input information input through a controller by a player at intervals of a predetermined number of frames in order to move said player character in said game space at a speed;

a location updating programmed logic circuitry for updating the location of said player character and said target location in said game space based on said input information;

a virtual-camera-location updating programmed logic circuitry for updating in order a location of said virtual camera in such a manner that a distance from said target location to a reference location determined in a predetermined manner toward the location of said virtual camera at a predetermined ratio of the distance calculated at the previous interval is shortened, regardless of a direction in the change of the speed of the player character in the game space,

wherein

said distance is set at a predetermined maximum value when said distance calculated at the previous interval exceeds the predetermined maximum value; and

a game-image generating programmed logic circuitry for generating the game image based on the updated location of said player character and location of said virtual camera;

wherein a moving speed of the virtual camera is variable and is determined based on said determined distance.

16. (Previously Presented) The game apparatus according to claim 15, wherein the moving speed of the virtual camera varies based on said determined distance so that the moving speed is faster when said determined distance is farther and slower when said determined distance is closer.

17. (Currently Amended) A storing medium that stores a control program of a virtual camera executed by a computer of a game apparatus in which the virtual camera arranged in a three-dimensional game space is made to follow a target location determined by a location of a player character in the game space so that a behavior of the player character in the game space is displayed in a display as a game image, the control program of said virtual camera allows said computer to be functioned to provide:

an input-information obtaining programmed logic circuitry for obtaining input information input through a controller by a player at intervals of a predetermined number of frames in order to move said player character in said game space at a speed;

a location updating programmed logic circuitry for updating the location of said player character and said target location in said game space based on said input information;

a virtual-camera-location updating programmed logic circuitry for updating in order a location of said virtual camera in such a manner that a distance from said target location to a reference location determined in a predetermined manner toward the location of said virtual camera at a predetermined ratio of the distance calculated at the previous interval is shortened,

regardless of the direction in a change of the speed of the player character in the game space,
wherein

said distance is set at a predetermined maximum value when said distance calculated at
the previous interval exceeds the predetermined maximum value; and

a game-image generating programmed logic circuitry for generating the game image
based on the updated location of said player character and location of said virtual camera;

wherein a moving speed of the virtual camera is variable and is determined based on said
determined distance.

18. (Previously Presented) The storing medium according to claim 17, wherein the
moving speed of the virtual camera varies based on said determined distance so that the moving
speed is faster when said determined distance is farther and slower when said determined
distance is closer.

19. (Currently Amended) A method of controlling a virtual camera in a game apparatus
in which the virtual camera arranged in a three-dimensional game space is made to follow a
target location determined by a location of a player character in the game space so that a
behavior of the player character in the game space is displayed in a display as a game image,
comprising following steps of:

(a) obtaining input information input through a controller by a player at intervals of a
predetermined number of frames in order to move said player character in said game space at a
speed,

(b) updating the location of said player character and said target location in said game

space based on said input information,

(c) updating in order a location of said virtual camera in such a manner that a distance from said target location to a reference location determined in a predetermined manner toward the location of said virtual camera at a predetermined ratio of the distance calculated at the previous interval is shortened, regardless of the direction in a change of the speed of the player character in the game space, wherein

said distance is set at a predetermined maximum value when said distance calculated at the previous interval exceeds the predetermined maximum value, and

(d) generating the game image based on the updated location of said player character and location of said virtual camera;

wherein a moving speed of the virtual camera is variable and is determined based on said determined distance.

20. (Previously Presented) The method according to claim 19, wherein the moving speed of the virtual camera varies based on said determined distance so that the moving speed is faster when said determined distance is farther and slower when said determined distance is closer.

21. (Currently Amended) A game apparatus in which a virtual camera arranged in a three-dimensional game space is made to follow a target location determined by a location of a player character in the game space so that a behavior of the player character in the game space may be displayed as a game image, comprising:

an input-information obtaining programmed logic circuitry for obtaining input

information input through a controller by a player at intervals of a predetermined number of frames in order to move said player character in said game space at a speed;

a location updating programmed logic circuitry for updating the location of said player character and said target location in said game space based on said input information;

a virtual-camera-location updating programmed logic circuitry for sequentially updating, on a frame by frame basis, a location of said virtual camera in such a manner that a distance between said target location and a reference location that is determined with respect to the location of said virtual camera is made smaller at a predetermined ratio of the distance calculated at the previous interval per frame, regardless of the direction in a change of the speed of the player character in the game space, wherein

said distance is set at a predetermined maximum value when said distance calculated at the previous interval exceeds the predetermined maximum value; and

a game-image generating programmed logic circuitry for generating the game image based on the updated location of said player character and location of said virtual camera;

wherein a moving speed of the virtual camera is variable and is determined on based said determined distance.

22. (Previously Presented) The game apparatus according to claim 21, wherein the moving speed of the virtual camera varies based on said determined distance so that the moving speed is faster when said determined distance is farther and slower when said determined distance is closer.

23. (Currently Amended) A storage medium that stores a control program of a virtual

camera executed by a computer in which the virtual camera arranged in a three-dimensional game space follows a target location determined by a location of a player character in the game space so that a behavior of the player character in the game space may be displayed as a game image, the control program of said virtual camera allows execution by said computer to provide:

an input-information obtaining programmed logic circuitry for obtaining input information input through a controller by a player at intervals of a predetermined number of frames in order to move said player character in said game space at a speed;

a location updating programmed logic circuitry for updating the location of said player character and said target location in said game space based on said input information;

a virtual-camera-location updating programmed logic circuitry for sequentially updating, on a frame by frame basis, a location of said virtual camera in such a manner that a distance from said target location to a reference location that is determined with respect to the location of said virtual camera is made smaller at a predetermined ratio of the distance calculated at the previous interval per frame, regardless of the direction in a change of the speed of the player character in the game space, wherein

said distance is set at a predetermined maximum value when said distance calculated at the previous interval exceeds the predetermined maximum value; and

a game-image generating programmed logic circuitry for generating the game image based on the updated location of said player character and location of said virtual camera;

wherein a moving speed of the virtual camera is variable and is determined based said determined distance.

24. (Previously Presented) The storage medium according to claim 23, wherein the moving speed of the virtual camera varies based on said determined distance so that the moving speed is faster when said determined distance is farther and slower when said determined distance is closer.

25. (Currently Amended) A method of controlling a virtual camera in a three-dimensional game space so as to follow a target location determined by a location of a player character in the game space so that a behavior of the player character in the game space may be displayed in a display as a game image, the method comprising:

(a) obtaining input information input through a controller by a player at intervals of a predetermined number of frames in order to move said player character in said game space at a speed,

(b) updating the location of said player character and said target location in said game space based on said input information,

(c) sequentially updating, on a frame by frame basis, a location of said virtual camera in such a manner that a distance from said target location to a reference location that is determined with respect to the location of said virtual camera is made smaller at a predetermined ratio of the distance calculated at the previous interval per frame, regardless of the direction in a change of the speed of the player character in the game space, wherein

said distance is set at a predetermined maximum value when said distance calculated at the previous interval exceeds the predetermined maximum value, and

(d) generating the game image based on the updated location of said player character and location of said virtual camera;

wherein a moving speed of the virtual camera is variable and is determined based said determined distance.

26. (Previously Presented) The method according to claim 25, wherein the moving speed of the virtual camera varies based on said determined distance so that the moving speed is faster when said determined distance is farther and slower when said determined distance is closer.

27. (Currently Amended) A game apparatus in which a virtual camera arranged in a three-dimensional game space is made to move to follow a target location determined by a location of a player character in the game space so that a behavior of the player character in the game space is displayed in a display as a game image, comprising:

an input-information obtaining programmed logic circuitry for obtaining input information input through a controller by a player at intervals of a predetermined number of frames in order to move said player character in said game space at a speed;

a location updating programmed logic circuitry for updating the location of said player character and said target location in said game space based on said input information at said intervals of said predetermined number of frames;

a difference length calculating programmed logic circuitry for calculating at said intervals of said predetermined number of frames a difference length between a predetermined reference distance and a distance between said location of said target location and a location of said virtual camera;

a virtual-camera-location updating programmed logic circuitry for updating at said intervals of said predetermined number of frames in order said location of said virtual camera in

such a manner that said difference length calculated by said difference length calculating programmed logic circuitry is reduced by a predetermined ratio of the difference length calculated at the previous interval when said difference length exists, when the speed of the player character increases, wherein

said difference length is set at a predetermined maximum value when said difference length calculated at the previous interval exceeds the predetermined maximum value; and

a game-image generating programmed logic circuitry for generating the game image based on the updated location of said player character and location of said virtual camera.